

HYGIENE AND PUBLIC HEALTH

UNDER THE CHARGE OF

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Studies of the β -hemolytic Streptococcus.—SMILLIE (*Jour. Inf. Dis.*, 1917, xx, 45) states that the β -hemolytic streptococcus was found by Theobald Smith and J. Howard Brown to be the etiological agent in several milk-borne epidemics of septic sore throat. They believed the strain to be a human type, though it may be introduced into a cow's udder and produce a mild reaction. It has definite characteristics which distinguish it, and which have been described by Smith and Brown. Smillie repeated the work of these authors in the study of the epidemiology of two outbreaks of milk-borne septic sore throat. In each epidemic, the β -hemolytic streptococcus was found in the throats of the victims. In one epidemic, the same strain of streptococcus was found in the suspected milk. In the other epidemic, the β -hemolytic streptococcus was isolated from a mildly inflamed udder of one of the dairy cows. In order to ascertain the prevalence of the β -hemolytic streptococcus in normal throats, 100 average throats were searched for the types of streptococci present, and though many hemolytic streptococci were found, the β -hemolytic type of streptococcus of Smith and Brown was found but once. The throats of 20 individuals who had had milk-borne epidemic septic sore throat within two years were searched for the β -hemolytic streptococcus in order to estimate the prevalence of carriers of this strain. One carrier was found, a nurse who had had septic sore throat four months before. This nurse had later been the cause of a small contact infection epidemic of tonsillitis, thus illustrating the relation between the sporadic and epidemic mode of infection. The throats of 20 cases of sporadic tonsillitis were studied in order to ascertain the proportion of cases of ordinary tonsillitis due to the Smith streptococcus. Five of the 20 cases were found to be due to the β -hemolytic type of streptococcus. Finally, the prevalence of the β -hemolytic streptococcus was studied in 48 cases of scarlet fever. This strain was found in the throats of all the severe cases, and in some of the moderate and mild cases of the disease. There seemed to be a close relation between the severity of the disease, and the numbers and virulence of the β -hemolytic streptococci in the patients' throats. The same type of streptococci were also found in the aural and nasal discharges of four suspected carriers of scarlet fever. In all these diseases—septic sore throat, sporadic tonsillitis and scarlet fever—the β -hemolytic streptococcus was found in gradually diminishing numbers throughout con-

valescence, usually disappearing from the throat in ten to fourteen days. The author believes that epidemic tonsillitis, or septic sore throat, is not wholly due to the use of contaminated milk, but that it may be spread by direct contact. The β -hemolytic streptococcus is rarely found in normal human throats, and carriers are not common. Thus, though the flora from human throats frequently finds its way to the daily milk supply, milk-borne epidemics are not of daily occurrence. The great menace to the community is the convalescent case of septic sore throat, sporadic tonsillitis or scarlet fever, for this individual is a source of danger, insofar as he comes in intimate relations with his fellows; spreading disease to the individual by direct contact, or to the whole community by infecting the milk supply.

The Influence of Milk and Carbohydrate Feeding on the Character of the Intestinal Flora. Diet versus Bacterial Implantation.—HULL and RETTGER (*Jour. Bact.*, 1917, ii, 47-71) remark that the culmination of several years of investigation carried on in the Sheffield Scientific School of Yale University corroborates the earlier experiments on animal feeding in which the following points were definitely determined. A change in the diet of white rats from the ordinary mixed food to one containing starch, lard, protein-free milk and a pure protein quickly led to a simplification of the intestinal flora, the Gram-positive organisms being displaced by Gram-negatives. *B. coli* was practically eliminated, while members of the *B. acidophilus* predominated or constituted almost the entire flora. Milk and lactose were particularly effective in establishing the acidophilus group. In milk feeding *B. acidophilus* became abundant, while in continued lactose feeding it was usually supplanted by *B. bifidus*. Carbohydrates other than milk-sugar fail to bring about this transformation. The ingestion of foreign bacteria, even in large numbers, did not of itself bring about an elimination of the common intestinal microorganisms. The feeding of *B. bulgaricus* tablets without the use of milk or lactose can, therefore, be of little or no value. In the present investigation the following additional facts were obtained. Meat or other high protein diet increases the indol-producing bacteria and other organisms of the so-called "putrefactive" type, like *B. coli* and *B. welchii*; cornstarch appears to foster the amylolytic group of intestinal organisms, while in a few instances grain feed favored the development of what appeared to be fusiform bacilli. The reaction of the intestine remained independent of the character of the intestinal flora. While the acidity varied in the different rats, it was not increased during the lactose feeding. When lactose was given in dry form its presence could be detected in different parts of the intestine; during the feeding of lactose in solution the identification of the sugar in the intestine was much more difficult. The rapid development of the aciduric bacteria when a lactose diet is given in all probability is due to optimum cultural and environmental conditions which are created for these particular organisms by the lactose, although it may be present in very small amounts. A high lactose diet markedly influences the intestinal flora of man, though relatively large amounts of this sugar are necessary to bring about extensive changes in the flora. These facts have been amply corroborated by the work of other investigators. One

of the most important points established in the present work is the inability of a foreign organism to establish itself in the intestine of man or animal, except in disease by mere intestinal implantation.

The Clarification of Milk.—HASTINGS (*Jour. Am. Med. Assn.*, March 24, 1917, p. 899) states that careful experiments show that the bacterial content of milk is apparently increased by clarification, due to the breaking up of clumps. Clarification has no favorable effect on the keeping quality, and probably does not in any way improve the milk. It removes the dirt, but not the bacteria, pathogenic and otherwise, which were introduced with the dirt. It is hard to understand why health officials sanction clarification, yet the cities of St. Louis and Cincinnati, Ohio, Gary, Indiana, and Tulsa, Oklahoma, have passed ordinances requiring clarification, supposedly with the approval of the respective health departments. The introduction of pasteurization is opposed to by health officials because it enables the dealer to handle a poorer grade of milk than he otherwise could. Although this is, perfectly true, pasteurization gives the consumer a product more safe and of better keeping quality than the raw product. The clarification of milk is objectionable from the stand-point of the consumer, and yet health officials are apparently being led to urge its adoption.

Is Mosquito or Man the Winter Carrier of Malaria Organisms?—MITZMAIN and BRUIN (*Public Health Bulletin* No. 84, December, 1916, U. S. Public Health Service) studied the problem of quinin sterilization of the human host of malaria during the winter period; specially to determine: (1) If man alone harbors malaria parasites during this period. (2) If the mosquito is a potential factor in the perpetuation of malaria from fall to spring. The bulletin is an outcome of an intensive study conducted to determine for one locality at least, the relation of man and mosquito as influenced by the dormant conditions existing in the winter months in the southern United States. A group of fifteen plantations in the Mississippi Delta of the Yazoo valley, having a known malarial index of over 40 per cent. comprised the district in which the investigation was conducted. At the outset, it was required to ascertain in what stage of its life history *Anopheles* mosquitoes existed. It was noted that for this region only intermittent hibernation prevailed and that the adult female mosquito was the only form observed to hibernate. It was ascertained during the course of the winter studies that in this region occasional biting of aroused *Anopheles* did not have any pathogenic significance, all of the infections clinically noted were proved to be recurrences of former attacks. It was concluded that hibernating anophelines collected in the region investigated, did not harbor parasites of malaria. This was determined after an examination of 2122 dissected anophelines, of which 1211 specimens were examined before May 15, 1915. Among the remaining 911 specimens, serving as a malaria indicator for the spring season, 3 mosquitoes between May 15 and May 26, were definitely shown to contain oocysts indistinguishable from those seen in mosquitoes experimentally infected with human malaria. In the investigation of man as the responsible winter carrier, 1184 persons, residing on the plantations selected, were examined for malaria parasites.

Four hundred and ninety-two infections were identified microscopically, 317 cases were of the subtertian type, 8 were mixed infections, and the remainder were of the simple tertian type, with the exception of one quart case. In the consideration of these infections an important fact stands out: nearly one-fourth (24.8 per cent.) of the human carriers harbored gametocytes. It was proved that from a group of 103 persons, examined in March, 1915, 8 of the 15 gametocyte carriers identified, were similarly infected during the preceding fall. The incrimination of man as the sole winter carrier is emphasized by the fact that 3 malaria infected *Anopheles quadrimaculatus* were found in the homes of the gametocyte carriers during May 15 to May 26, previous to which time 1180 specimens of anopheles from this source were found to be negative.

Laundries and the Public Health.—SCHROEDER and SOUTHERLAND (*Public Health Reports*, February 19, 1917, xxii, No. 6) state that the purpose of this study is to ascertain the methods employed in New York City laundries with special inquiry into the efficacy of such methods in destroying pathogenic bacteria and thus preventing the spread of disease. The survey includes the following: (1) Methods employed in handling clothes in the home. (2) Methods employed in handling clothes in the homes of laundresses. (3) Methods employed in handling clothes in the hand laundries (white and Chinese). (4) Methods employed in handling clothes in the steam laundries. (5) Series of special tests of goods to note the effect of heat upon bacterial life. (6) A canvass of steam laundry managers to ascertain their opinions concerning the use of nets in laundries. The authors found the methods of dealing with laundry in the home to be quite sufficient to make the danger from infected linen negligible. The laundry which is done in the home of a laundress is usually clean and free from bacteria; but owing to the close quarters in which the laundresses live, there is a possibility of reinfection of clean linen if communicable diseases are present among the members of the laundress' family. Of the so-called hand laundries, of which there are 2800 in New York City, there are three groups: (1) Laundries known as feeders for the steam laundries and maintained by them for sorting, marking or distributing. (2) Laundries operated by private individuals who do some washing and practically all the drying and ironing on the premises. (3) Laundries operated by private individuals practically doing on the premises all the washing and ironing for patrons. This group includes all the Chinese laundries. After a careful study of the location of and conditions in these laundries, the methods of sorting, washing, drying and ironing the clothes, the authors make the statement that the so-called "hand laundries" are, to some extent, a menace to the public health because of the crowded living quarters connected with the laundries; because of the probability of infectious diseases occurring among the persons living in such quarters without proper means of isolation; because of the careless method employed for sorting the clothes, allowing the contact of clean and soiled linen; because of the packing of nets with a heterogeneous mass of clothes which cannot be penetrated by the proper amount of wash water, and to which cannot be applied the proper degree of heat nor amount of disinfectants; and because of the

lack of proper facilities for drying and sorting the clothes, and the general insanitary conditions under which the work is carried on. The conditions in the Chinese laundries were, on the whole, better than those found in the laundries maintained by white people. In the investigation of the steam laundries, the methods were as follows: Bacteriological tests were made of: (1) The bactericidal strength of water plus the soap and disinfecting solutions and the possible mechanical elimination of large numbers of bacteria in the process of washing. (2) The penetrative power of the heat employed in washing. (3) The value of the ironing processes in the destruction of bacteria. (4) The value of the drying processes. Of the steam laundries in New York City there are several groups: (1) Laundries connected with infectious disease hospitals. (2) Laundries which deal directly with families or individual patrons, and in which the clothes are washed and finished. (3) Laundries dealing indirectly with families or individual patrons through the medium of hand laundries. (4) Wet-wash laundries. The methods employed in laundries connected with infectious disease hospitals are described separately and a review of these leads conclusively to the belief that pathogenic organisms are destroyed by these methods. From a study of the other groups included under the steam laundries the following conclusions were reached: The comparatively few steam laundries which use standard routine methods of washing and keep a record of the time, material and solutions employed are getting better results than the average establishments. The methods employed by steam laundries in the collection and delivery of clothes are insanitary—soiled and clean clothes being brought into close proximity. In the majority of laundries clothes are washed under conditions prejudicial to the health of the employees. The method, quite commonly employed, of returning "wet" clothes to the patrons and to hand laundries is a possible menace to the public health. Wet clothes infected with bacteria and subjected to the usual degree of heat in drying houses, "tumblers," mangles and hot presses are freed from living organisms. The practice of wet washing, as now done in steam laundries is insanitary as the clothes do not receive the proper application of disinfectants, soap, water and heat. Owing to the difficulty of ascertaining whether clothes have been properly heated during the washing processes, and the possibility of the transmission of infection when not properly heated, all clothes washed in steam laundries should be dried upon the premises. The absence in the average steam laundry of proper sorting rooms for the clean linen and the consequent contact with soiled linen may result in a possible reinfection of the clean clothes.

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